

Novel Use of a Vascularized Sphenoid Mucosal Flap For Sellar Reconstruction

Daniel Gorelik, MD, MPH ¹, David Baskin, MD ², Claire Qu, BS ³,
Omar G. Ahmed, MD ¹; Masayoshi Takashima, MD ¹

¹ Division of Rhinology and Skull Base Surgery, Department of Otolaryngology – Head and Neck Surgery, Houston Methodist Hospital, Houston, Texas, USA

² Department of Neurosurgery, Houston Methodist Hospital, Houston, Texas, USA | ³ Baylor College of Medicine

Introduction

The prevalence of CSF leak after transsphenoidal tumor resection varies between 3.2 and 7.1% with some estimates noting even higher incidence¹.

Hence, a variety of skull base reconstruction options are needed to address the full range of patient needs and to address complications like cerebrospinal fluid (CSF) leaks.

The nasoseptal flap has been the workhorse for most of the current techniques of sellar reconstruction due to its robust blood supply and ability to cover large defects¹⁻⁴:

- Dural substitutes
- Medpor implants
- Abdominal fat
- Vascularized flaps

However, donor-site morbidity and prior harvest can limit nasoseptal flap use.

Purpose

We describe a vascularized flap derived from sphenoid sinus mucosa for sellar reconstruction after intraoperative cerebrospinal fluid (CSF) leak.

Methods

Single case report of a 56-year-old female from a single academic tertiary center.

She presented with an 8.5 x 5 x 8 mm suprasellar mass adherent to the pituitary stalk underwent transplanum transsphenoidal tumor resection.

After tumor resection a high flow CSF leak was encountered prompting repair.

Results

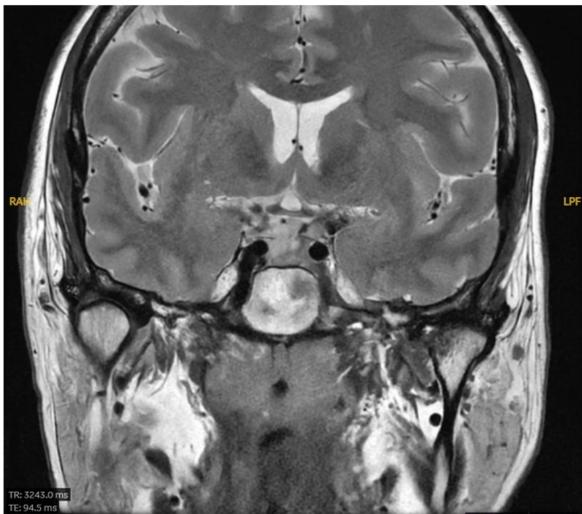


Figure 1. Preoperative MRI T2 Coronal view demonstrating pituitary lesion measure 8.5x5x8mm in the AP, transverse and craniocaudal dimensions respectively.

1. Flap elevation and mobilization:

A caudal elevator was used to elevate the sphenoid mucosa overlying the planum, sella and the infraclival recess. A midline mucosal incision was made followed by a horizontal superior incision along the planum. The flap was mobilized inferiorly while preserving its vascular supply to the mucosa.

2. Removal of the Sellar Floor:

With the flap preserved, the bony sella was opened with a Kerrison rongeur and exposed broadly from carotid to carotid and superiorly to the circular sinus.

3. Multilayer Sellar Reconstruction:

A collagen-based synthetic dural matrix was then used as an inlay graft under the bone but above the dura as the initial repair layer. The vascularized sphenoid mucosal flap was then rotated to cover the sellar defect and dural sealant was applied.

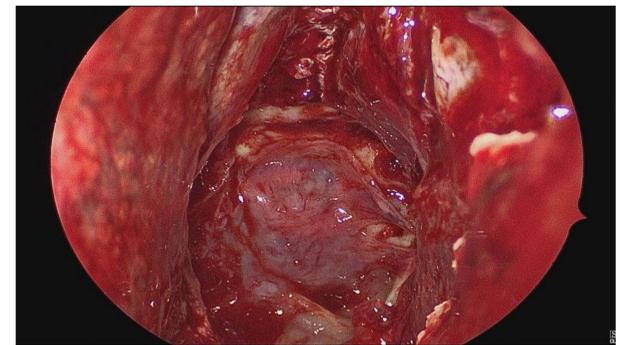


Figure 2. Intra-operative view of sellar reconstruction with preserved sphenoid mucosa.

Results: Post-Op

Postoperative Course:

Hospital course was complicated by emesis however surveillance imaging and clinical picture raised no concerns of leak or breakdown of repair. The lumbar drain was removed prior to discharge.

Follow Up:

At **one month follow up**, the sphenoid sinus mucosa was well healed without crusting or polypoid.

At **three months**, there was no clinical or radiographical evidence of a CSF leak or sinonasal morbidity.

Conclusions

Feasibility and clinical benefit is demonstrated for a random-based pedicled flap using preserved sphenoid sinus mucosa in the repair of a sellar defect with intraoperative high-flow CSF leak during pituitary tumor resection.

- Potential to reduce patient morbidity during recovery
- Promotes normalization and restoration of sphenoid sinus mucosa

Contact

Masayoshi Takashima, MD
Department of Otolaryngology – Head and Neck Surgery
Houston Methodist Hospital
6550 Fannin St
Houston, Texas 77030, USA
Email: Mtakashima@houstonmethodist.org

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